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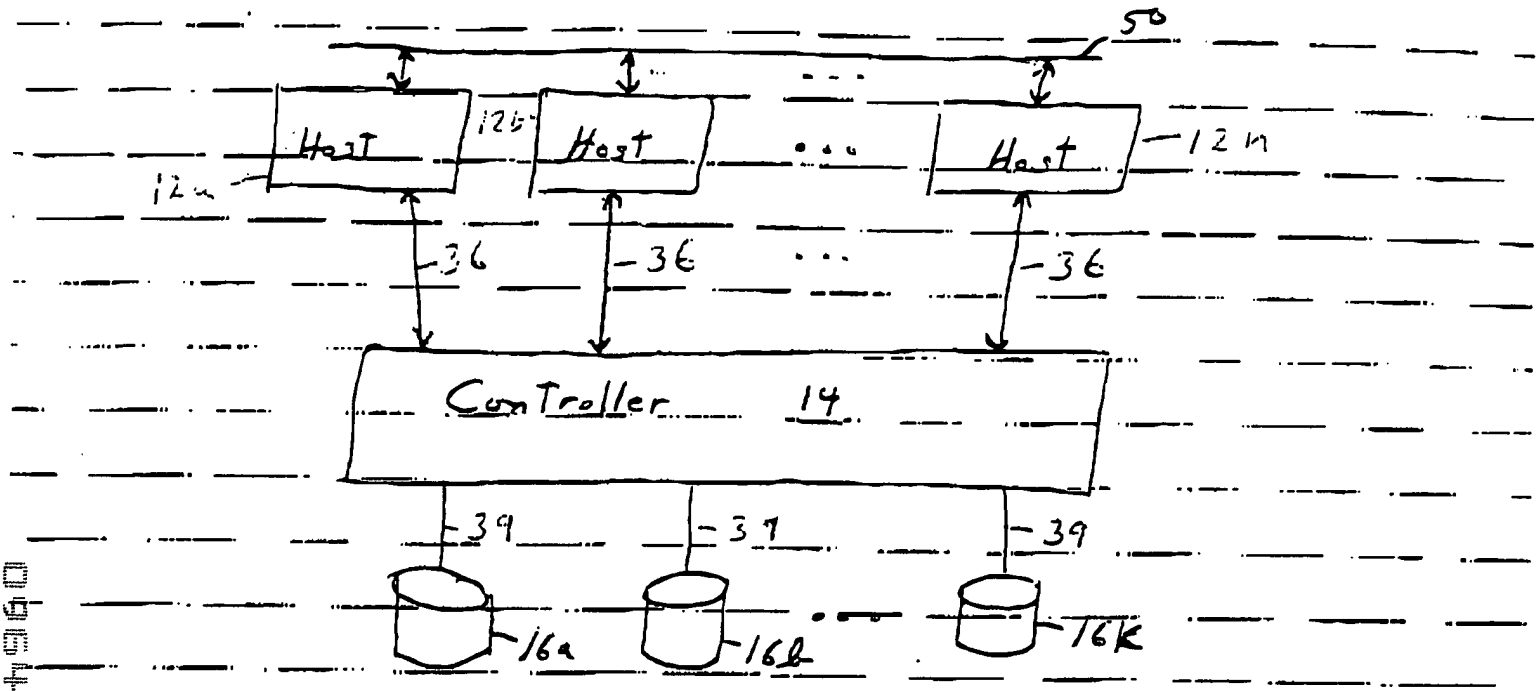


Fig. 1

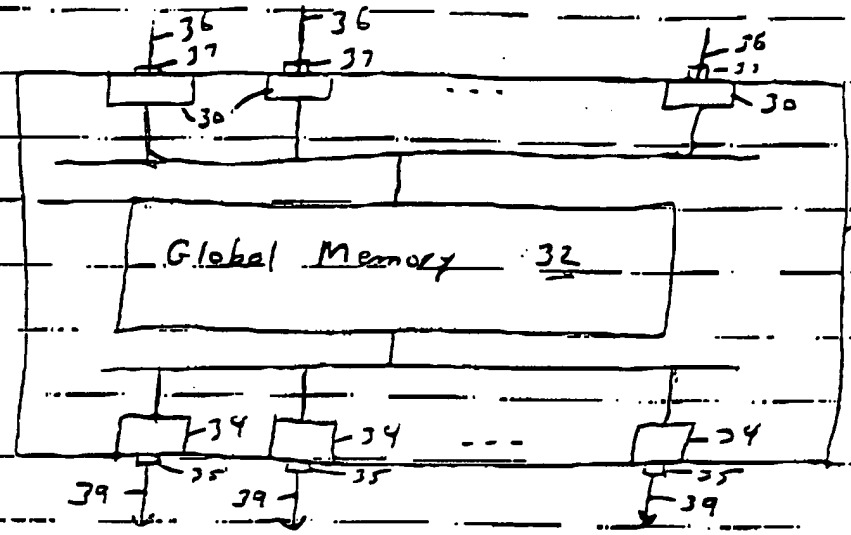


Fig. 2

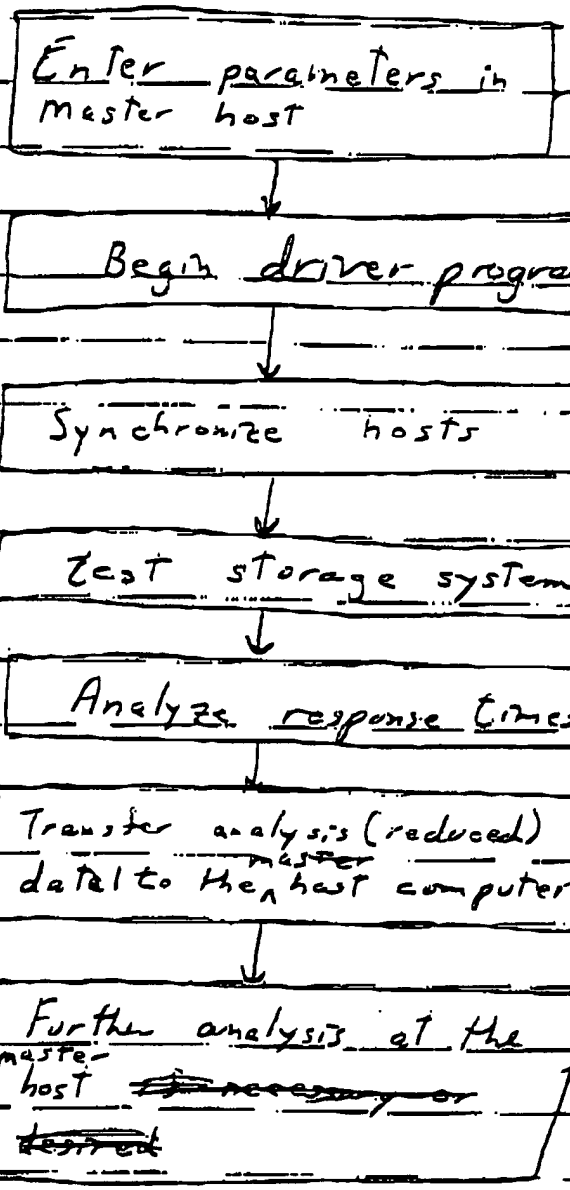


Fig. 3

REQUIRED	Number of logical disks
	Number of "child" processes to start
	Number of capture response times
	Number of response times
	Buffer size
	Offset size
	Maximum range
	time of test
	read/write size
	read/write mix
	ID of devices being tested
	ID of master & client hosts
	I/O type (sequential or random)
	Number of I/O operations performed to correct offset
OPTIONAL	Displacement from offset
	Delay between commands
	Initial byte offset
	Number of seeks for random I/O
	Data reduction method
	ICOA percent hit rate

Fig. 4

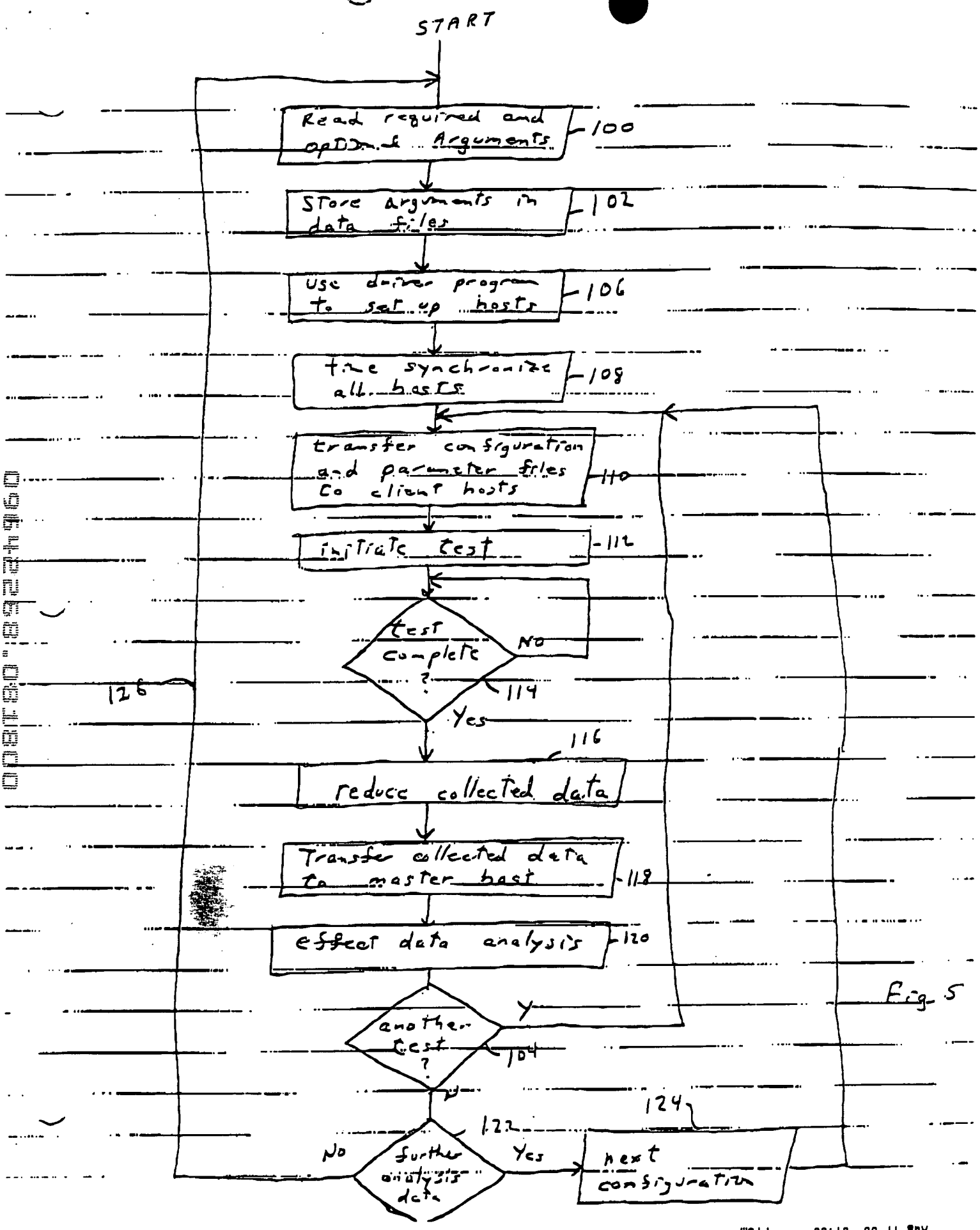


Fig. 5

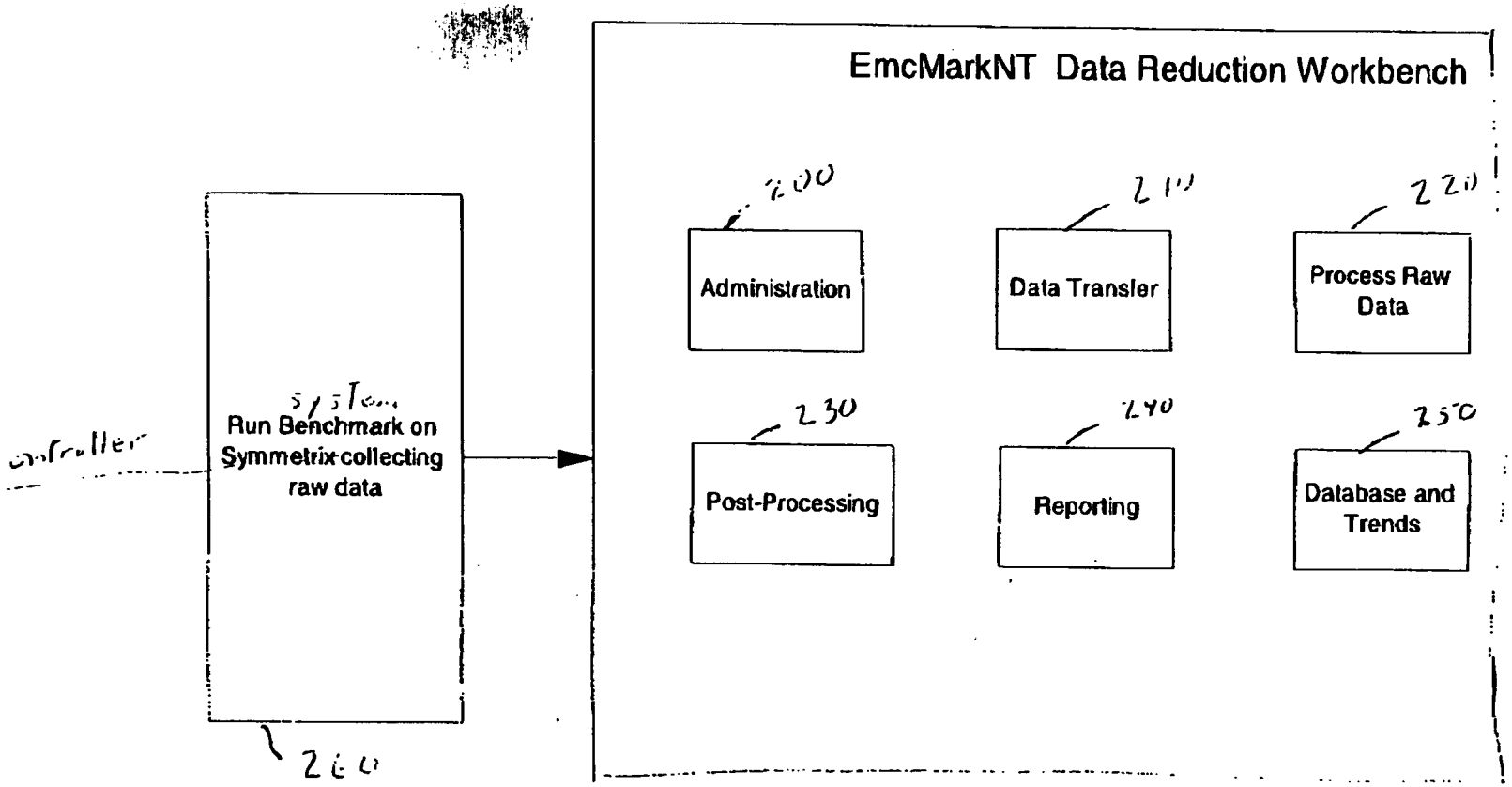


Fig. 6

EmcMarkNT Data Reduction Workbench Flow

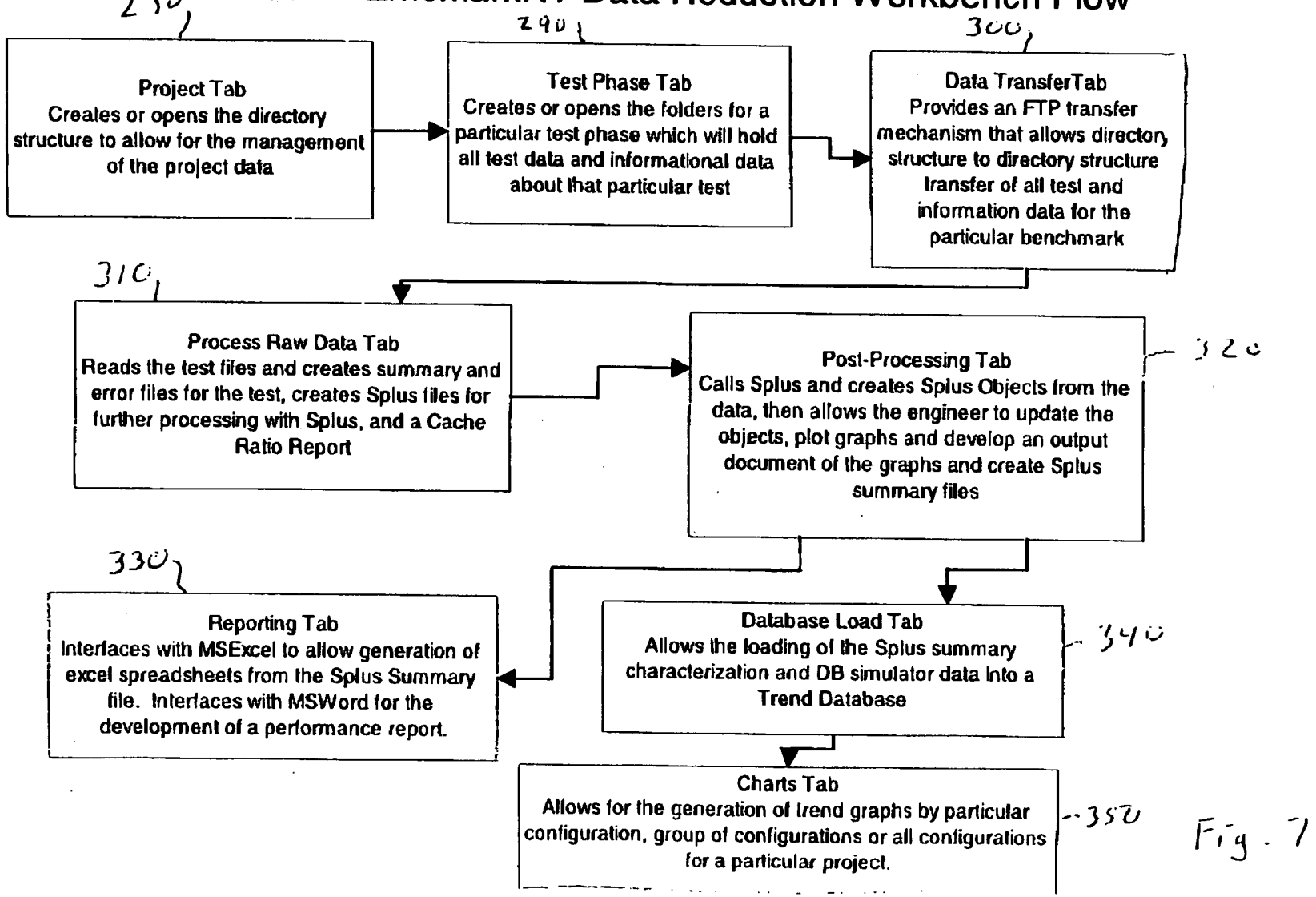
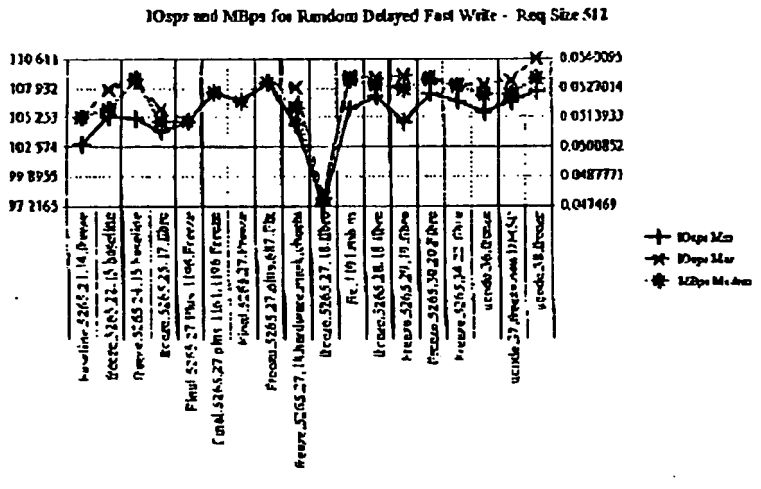
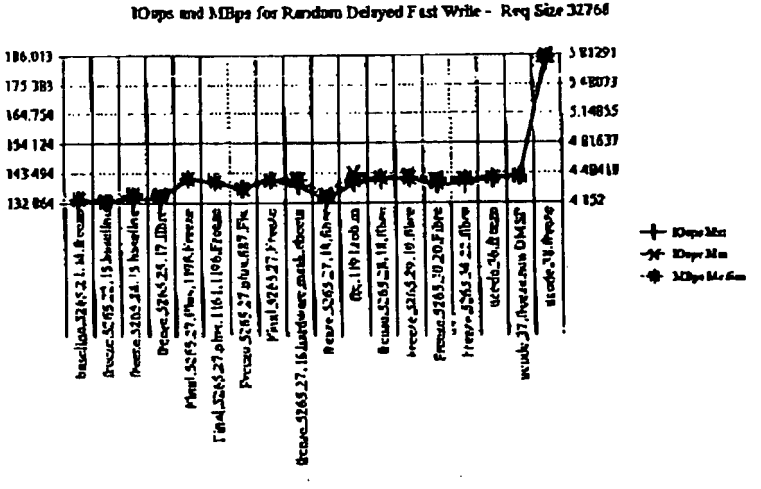


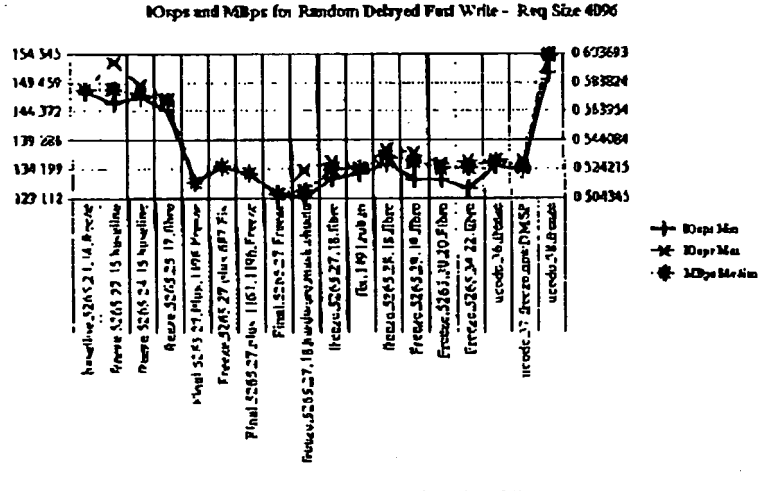
Fig. 7



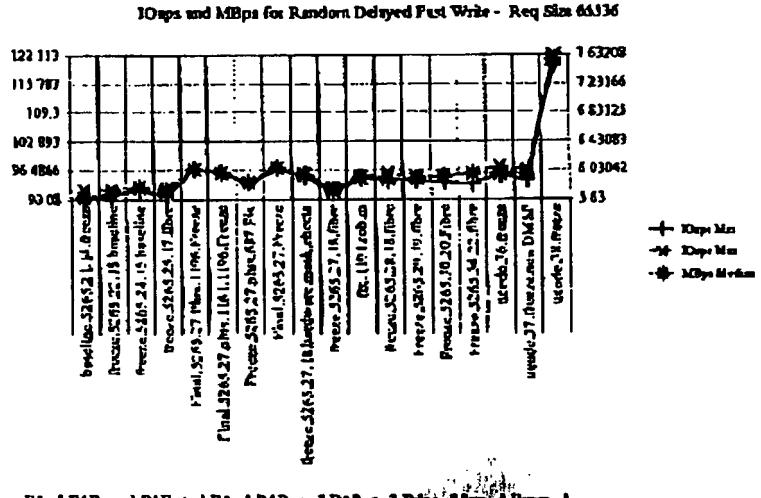
BA - 1 BAPort - 1 BAPort - 1 DA - 1 DAPort - 2 DAPort - 2 Drive - 2 Lun - 1 Hyper - 1



BA - 1 BAPort - 1 BAPort - 1 DA - 2 DAPort - 1 DAPort - 2 Drive - 2 Lun - 1 Hyper - 1

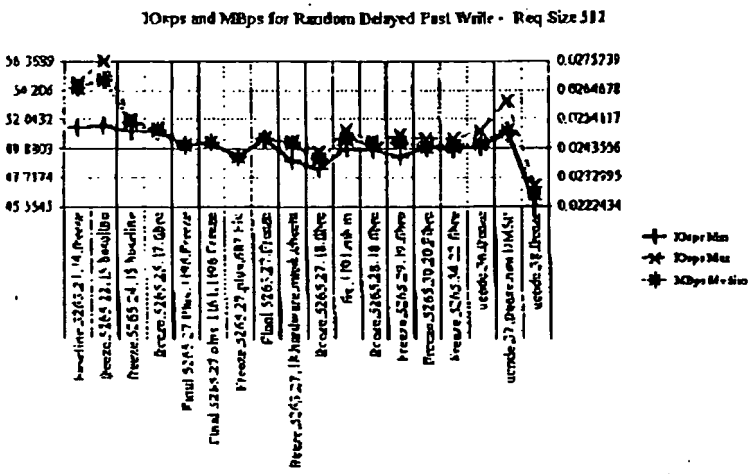


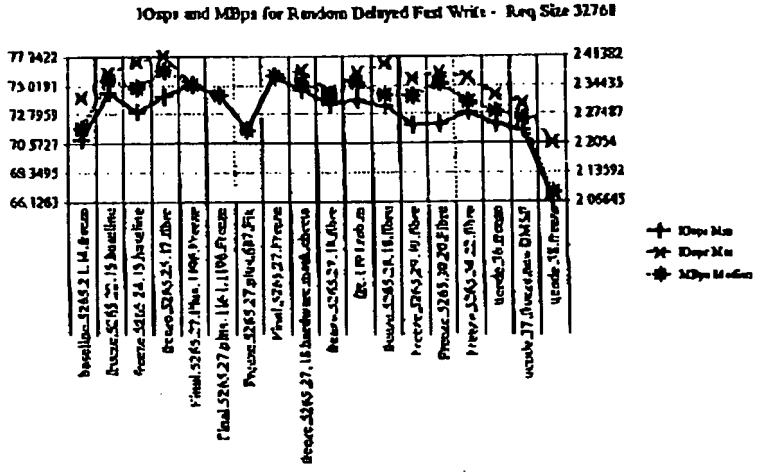
BA - 1 BAPort - 1 BAPort - 1 DA - 2 DAPort - 2 DAPort - 2 Drive - 2 Lun - 1 Hyper - 1

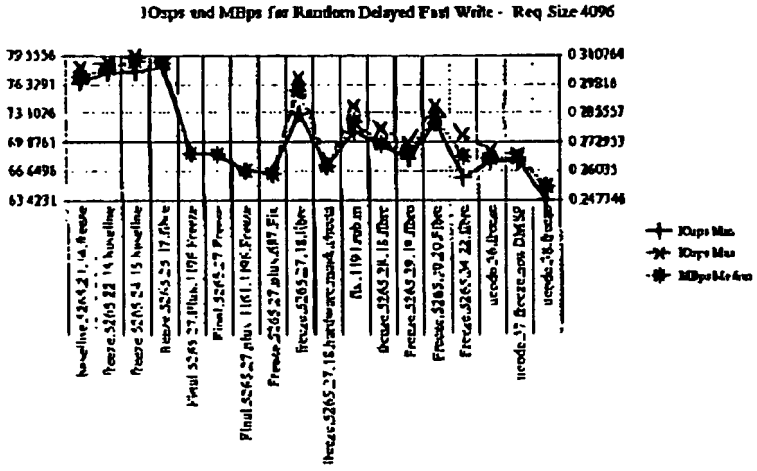


BA - 1 BAPort - 1 BAPort - 1 DA - 1 DAPort - 2 DAPort - 2 Drive - 2 Lun - 1 Hyper - 1

Fig 8A







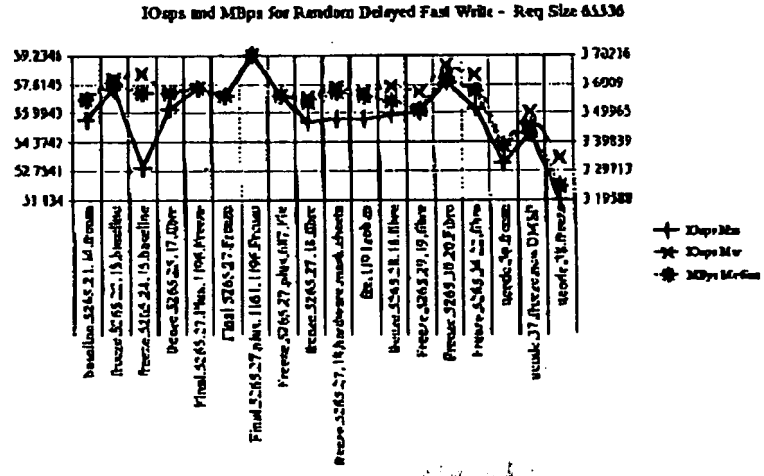
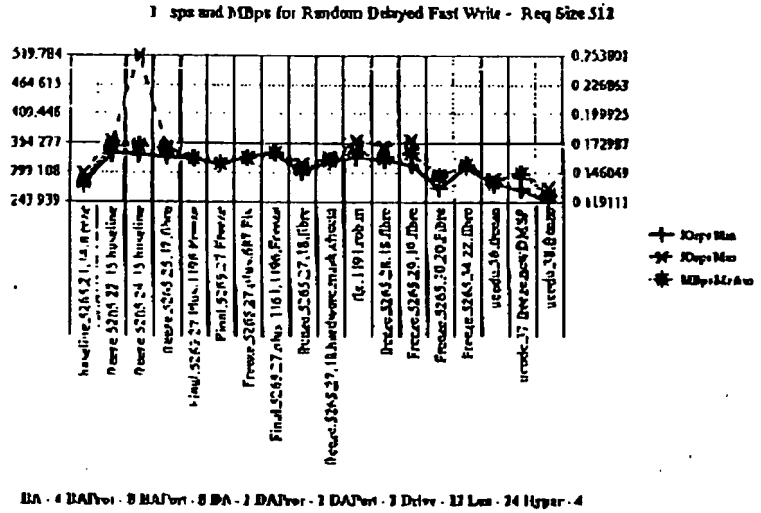
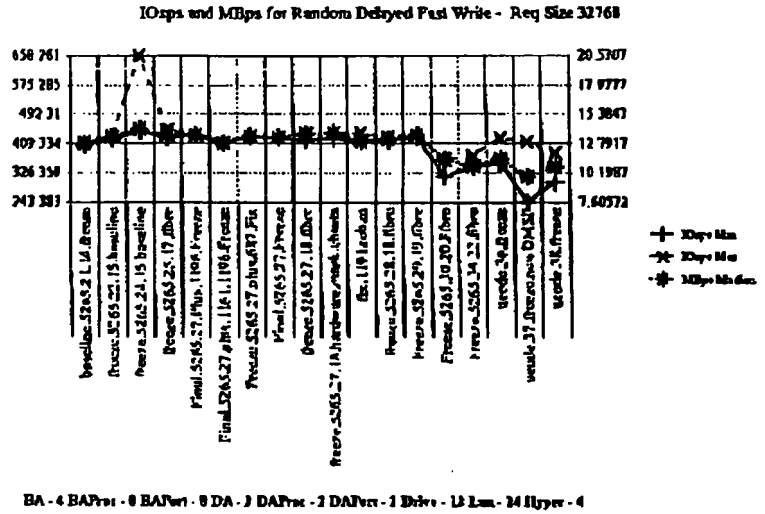
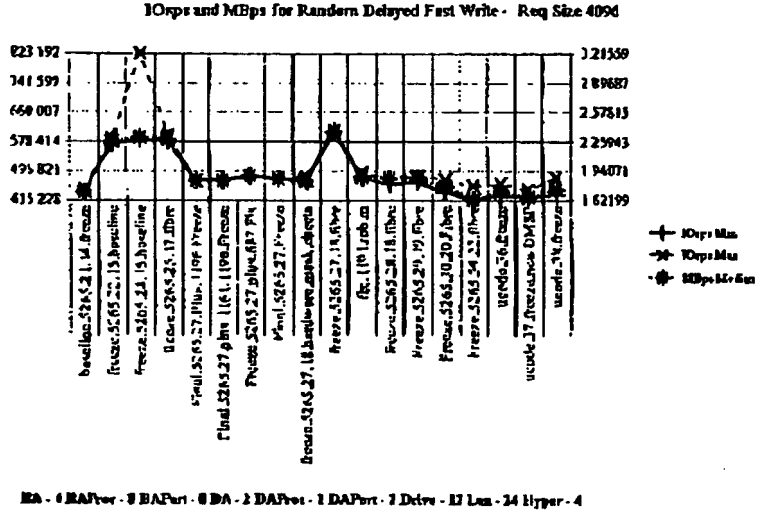


Fig 8B







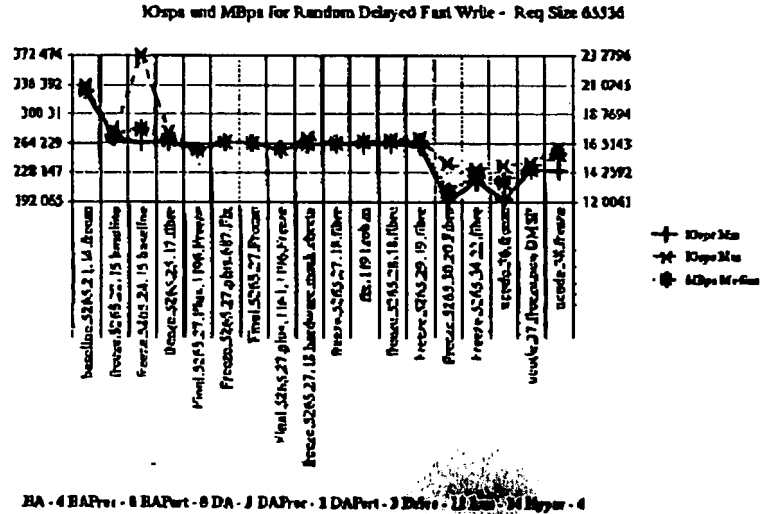
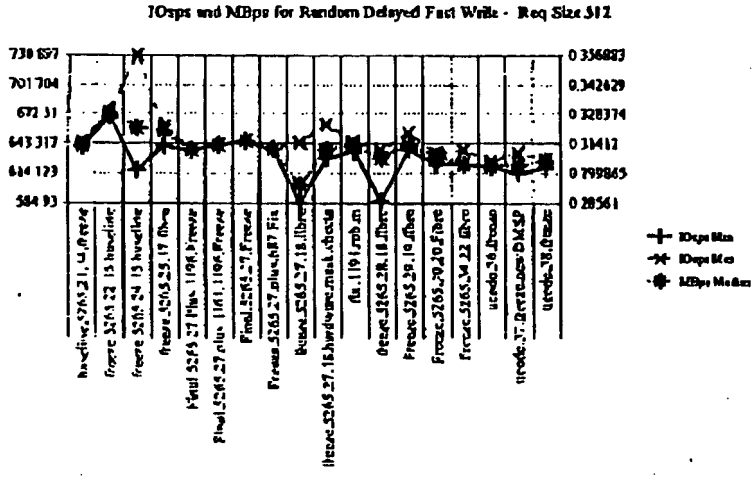
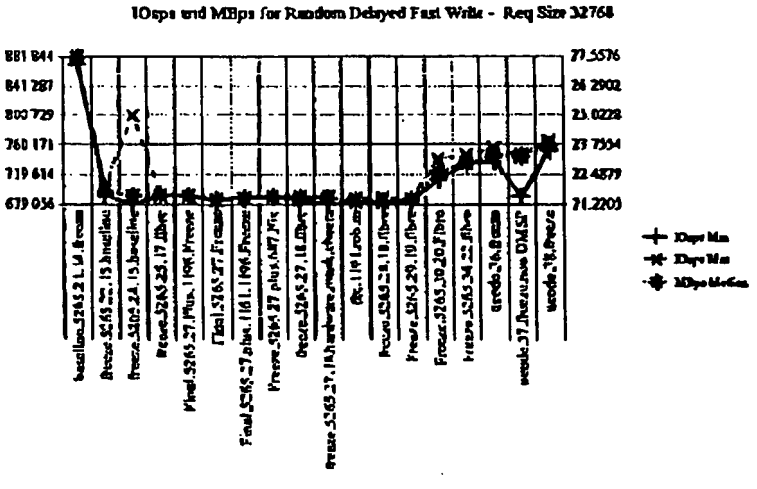
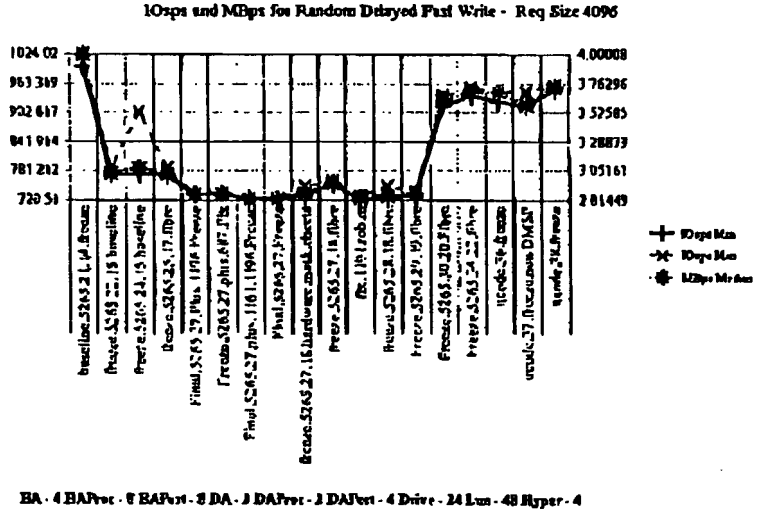


Fig 8C







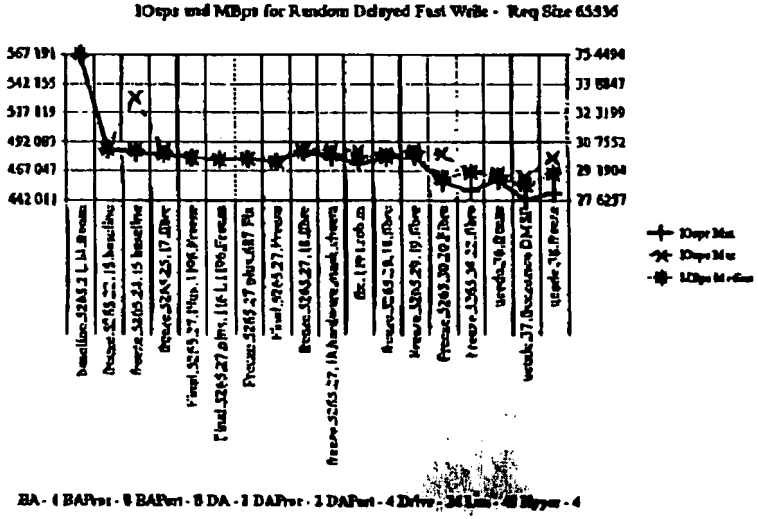


Fig 8P

Post Processing Tab

The Post Processing Tab creates objects, plot graphs and generates summary files using the Splus Data Analysis Software.

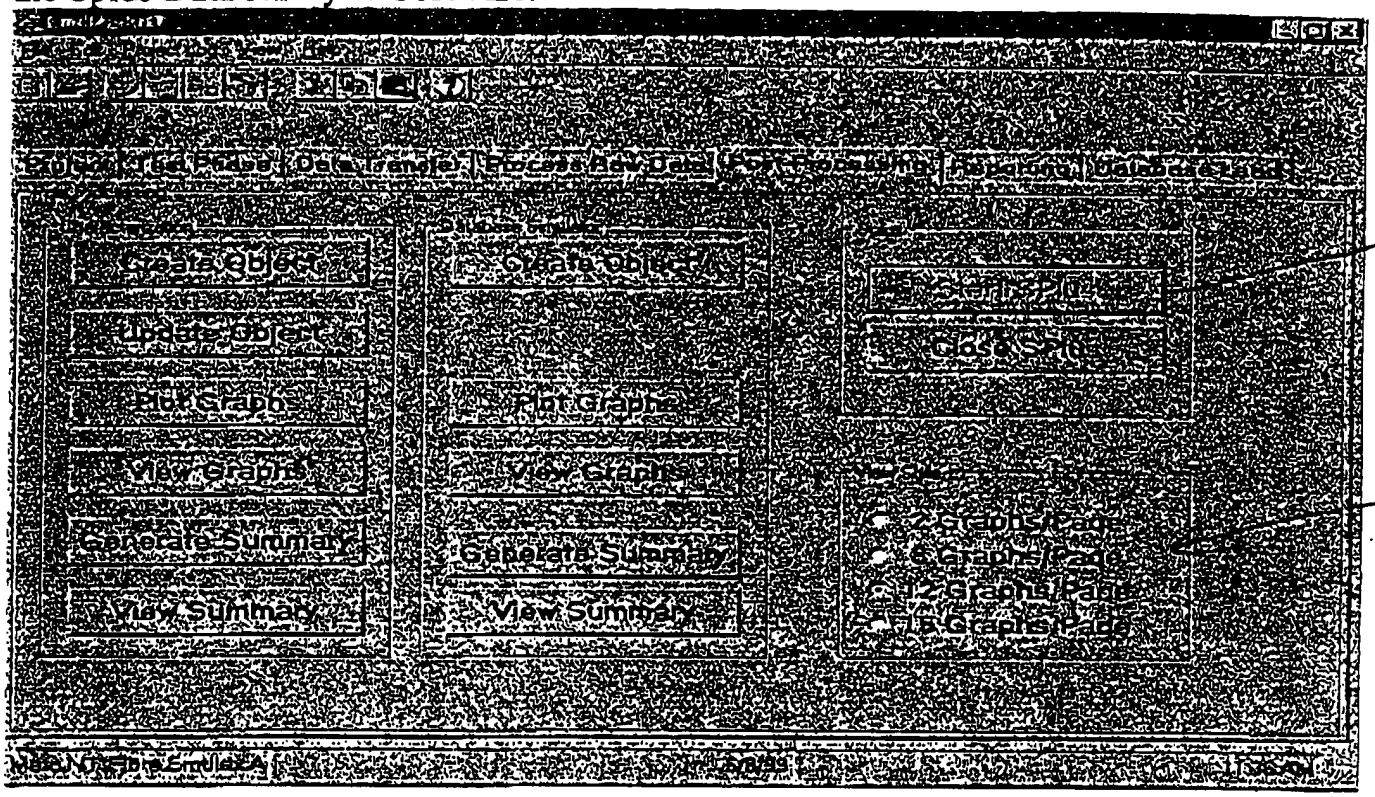


Fig. 4

Starting SPlus

1. Click on the Start Splus Button
   (Object buttons will be grayed out until Splus is running. If graphs or summary files have already been created those buttons will be visible)

2. Bring up the Splus window to watch for errors and to use during the Update Objects routine

3. Select 2 graphs/page 8 graphs/page, 12 graphs/page or 15 graphs/pageoption for viewing the graphs once generated

4. **Process Characterization or Database Simulator objects follow instructions on the next page.**

5. Select the Close Splus button when you are leaving this tab
   (If there is a problem closing Splus. bring up the window and close manually. Select NO twice to its Save Reports and Objects questions)

   (If you forget to close Splus before you exit the EMCMarkNT Data Reduction Tool you will need to quit out of Splus from the command line by typing **q()** or by file -> exit)

6. Go to the Reporting Tab

Symmetrix Configuration View

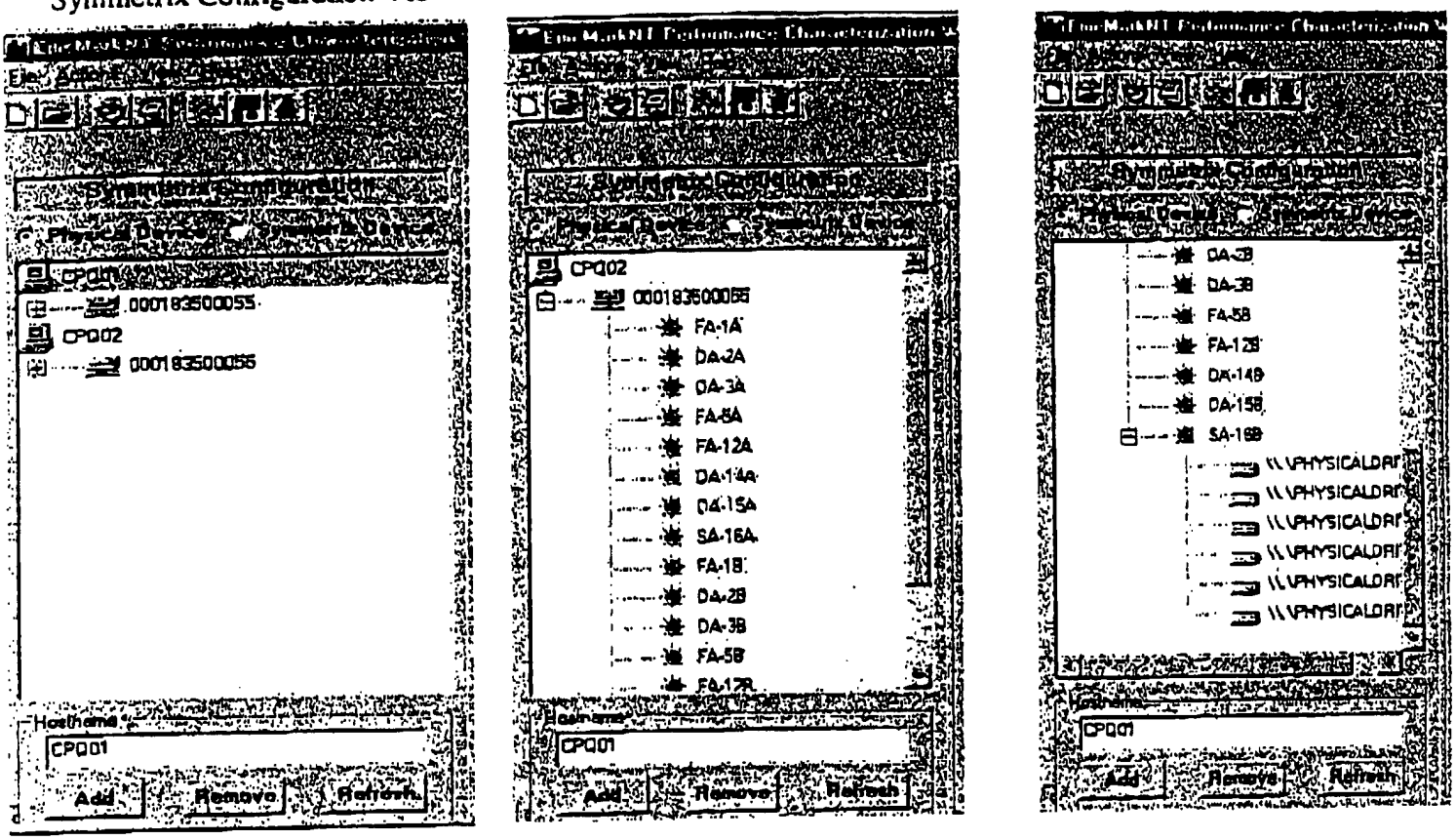


Fig. 9A

Lists the hosts and Symmetrix system
When the Symmetrix is expanded. BAs and DAs and will be displayed. Red indicates inactive and green indicates active

Physical Devices – will list the physical device names connected to the Symmetrix
Symmetrix Devices - will list the Symmetrix device names connected to the Symmetrix

Hostname – is the host highlighted on the list

The first host in the list is considered the Master Host
If no host is listed then the host you are on is considered the Master Host

Local, Remote, Gateway

If the Master Host is the host you are on then the job will run locally
If the Master Host is not the host you are then the job will run remotely, except
If there is a gateway setup in the Environment Tab, then the job will run through the gateway

Add – will add the host name typed in the Hostname box
Remove – will remove the host name typed in the Hostname box
Refresh – will refresh the host/Symmetrix information

Device Details

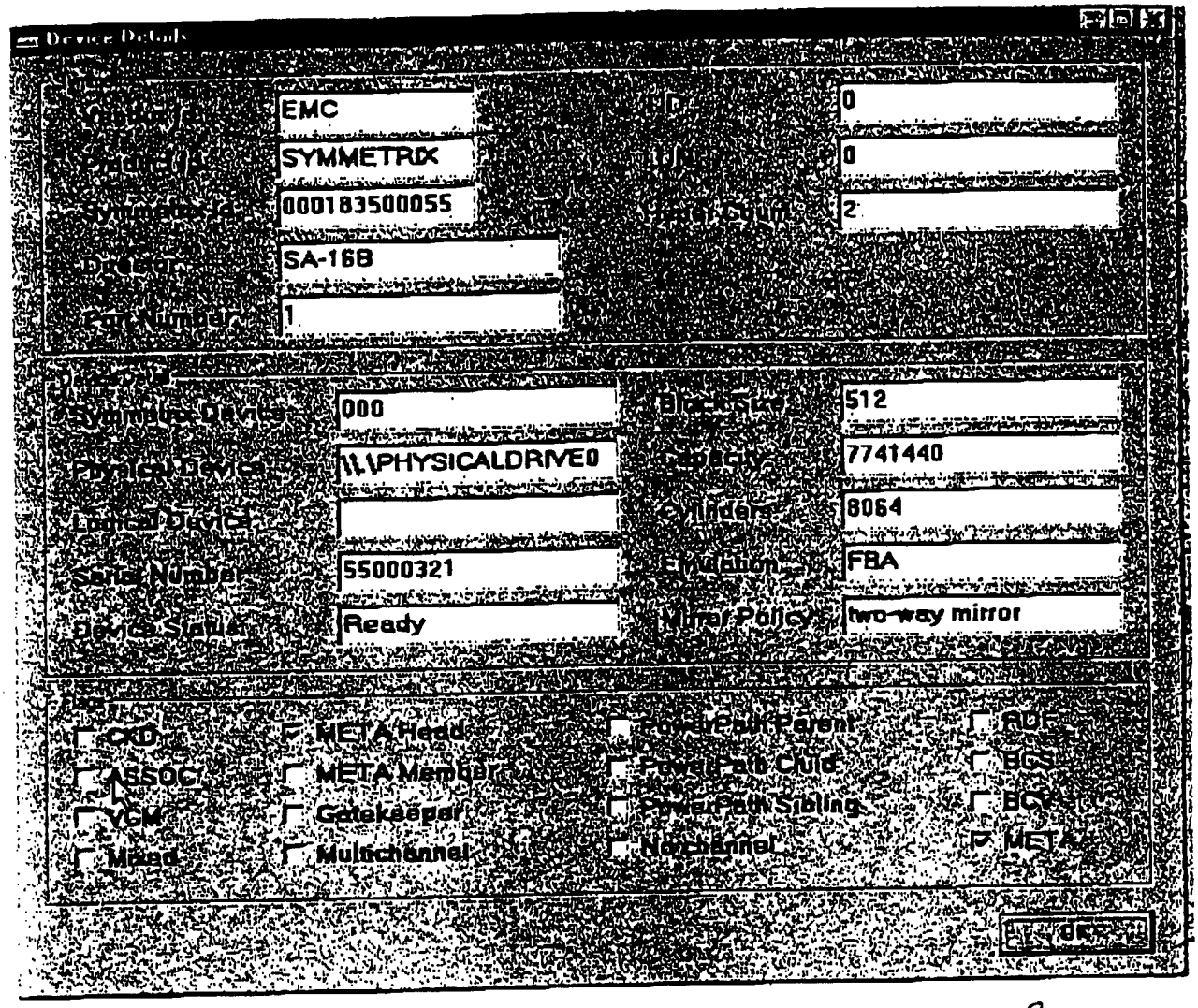


FIG. 9B

Symmetrix Details

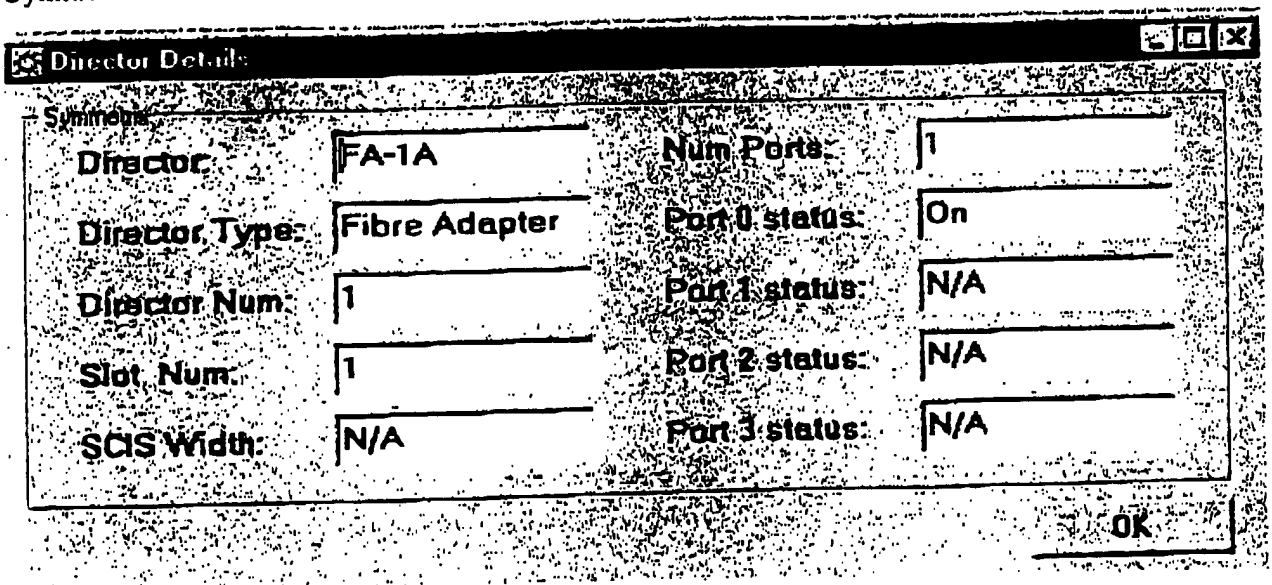
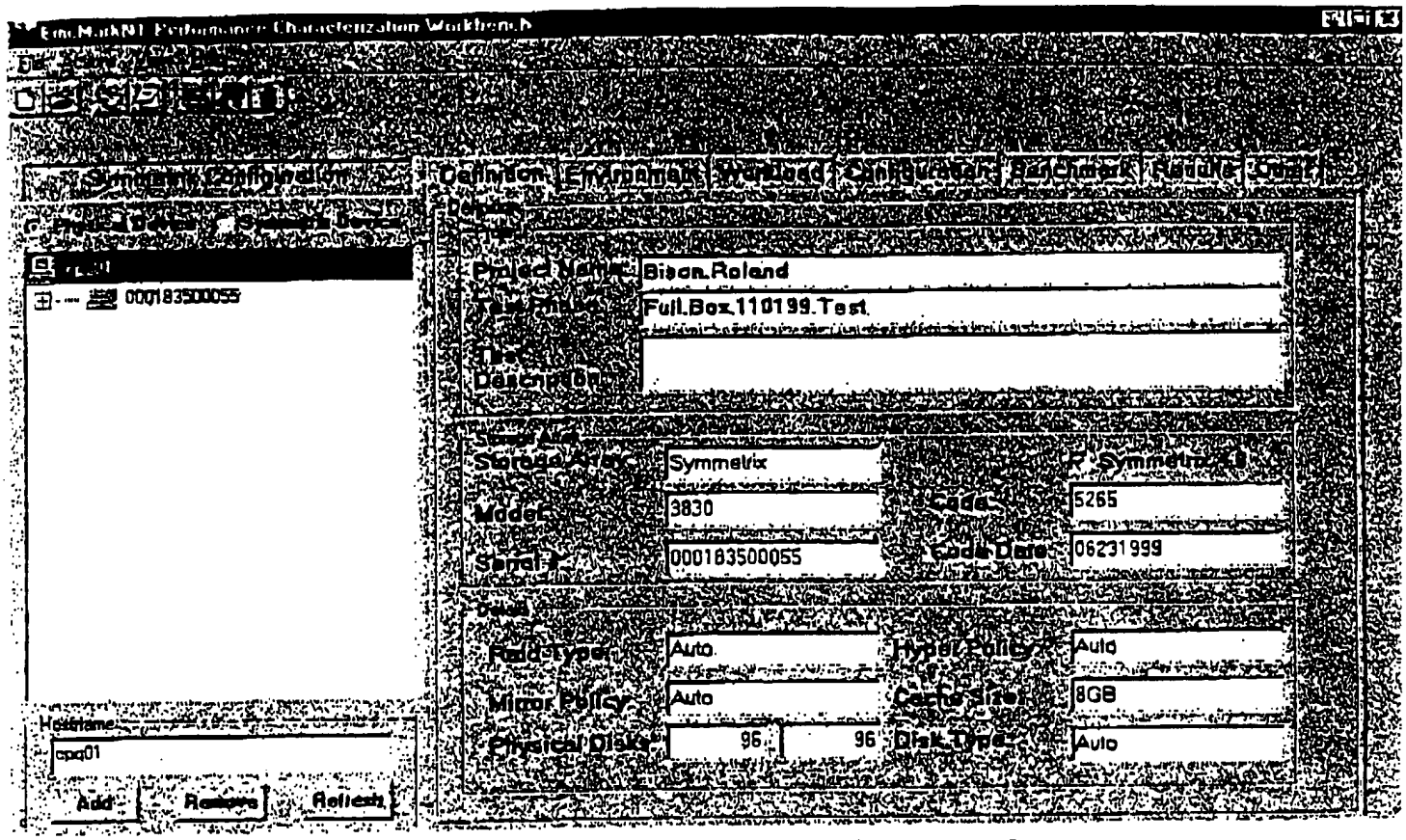


FIG 9C

Definition Tab



Project name – The project set up for this test.

- Select the New Project button to setup a new project, or the Open Project button to open a different Project.

Test Phase – the Test Phase setup for this test

- Select the New Test Phase button to setup a new test phase, or the Open Test Phase button to open a different Test phase under this project.

Test Description – comes from the ini file located in the Test Phase/Scripts folder

Storage Array Frame and Details Frame information from the ini file located in the Test Phase/Scripts folder You can manually update the fields, or if you double click on the Symmetrix box the information gathered from the Symmetrix will be populated into those fields and upon exit will be written to the ini file

Environment Tab

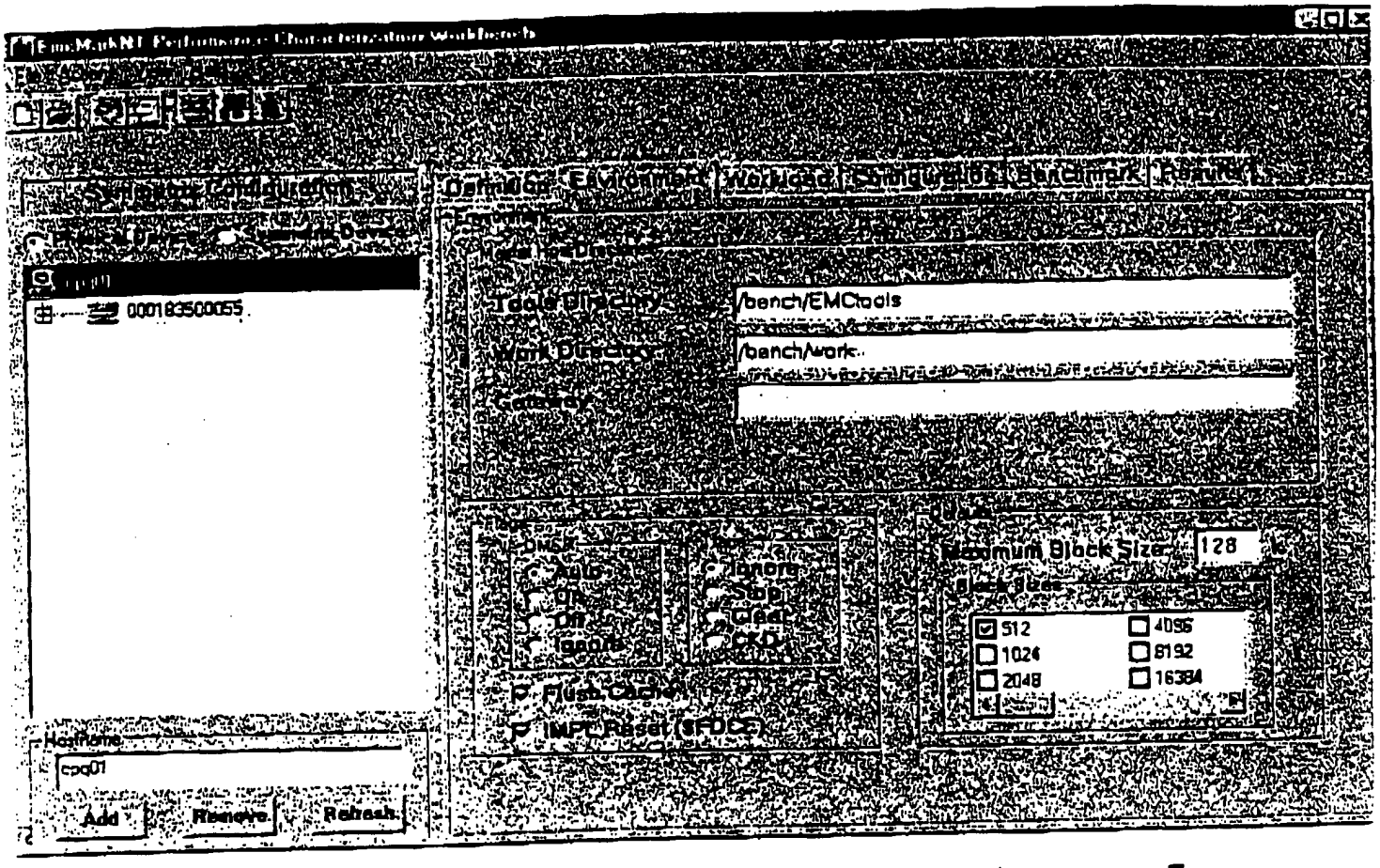


Fig 9E

Tools Directory – where the master scripts are located
Work Directory – your personal work folder
Flags -
- DMSP
- Trace

Flush Cache -
IMPL Reset ($FDCE) -
Defaults – Maximum Block size set to 128k
- Default blocks sizes selected for Workload when run directly from the Workbench

-Not saved upon exit, must reset each time

Workload Tab

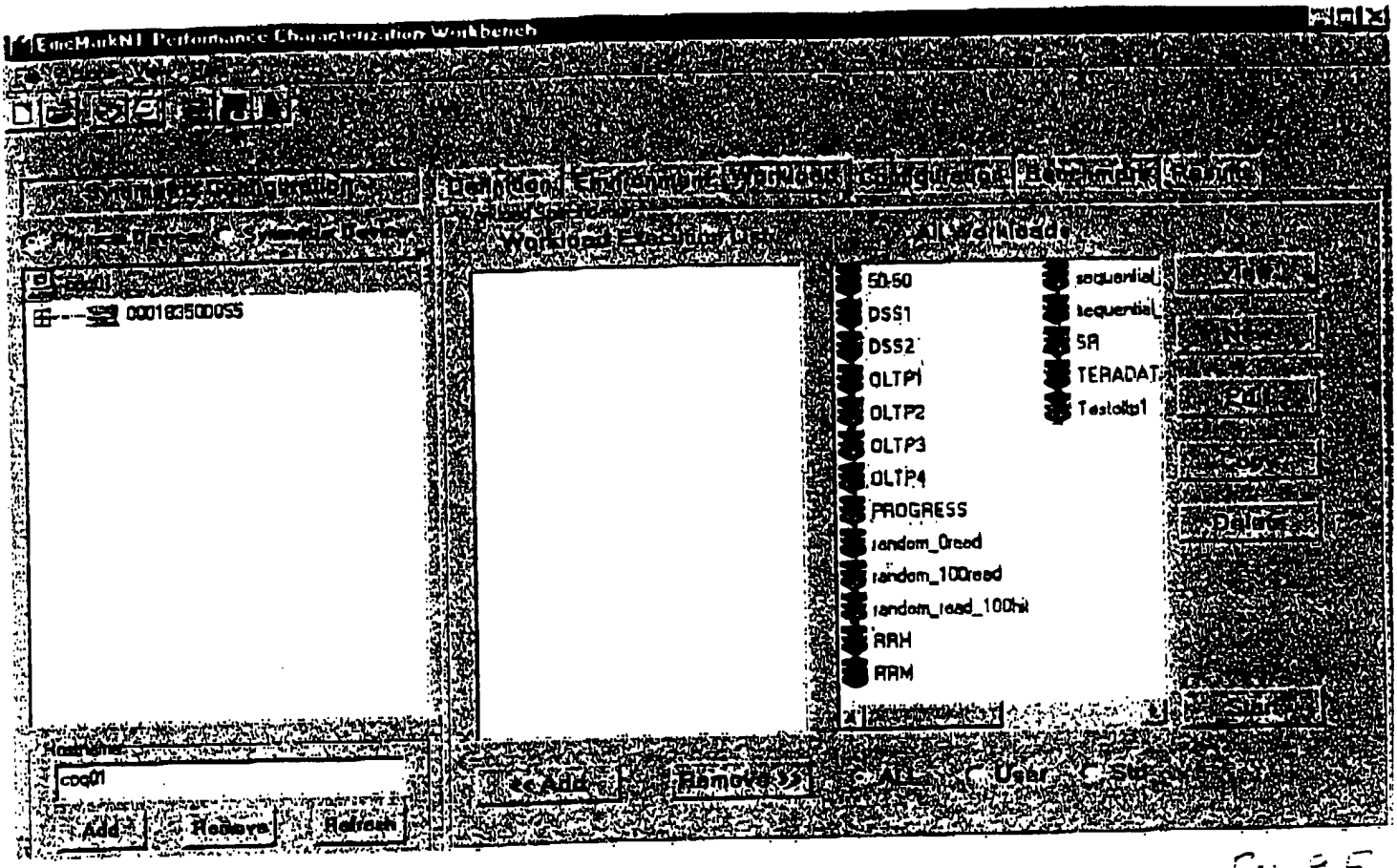


Fig 9F

All - All available Workloads **User** – User Defined Workloads **Std** – Standard Workloads

View - Allows viewing of the detailed definition of aWorkloads
New - Brings up the Define Workloads form to define a new Workloads
Edit - Allows editing of User Defined Workloads
Copy - Copies the selected Workload into a new name, then brings up the Edit screen allowing edits to the new Workload.
Delete - Only for User Defined Workloads. Allows the deletion of a Workload.
Add - Moved the selected Workload over to the Workloads Execution List.
Remove- Removes item from the Workloads Execution List to the All Workloads List
Start - Brings up the Workloads Execution form to define and start the Workloads

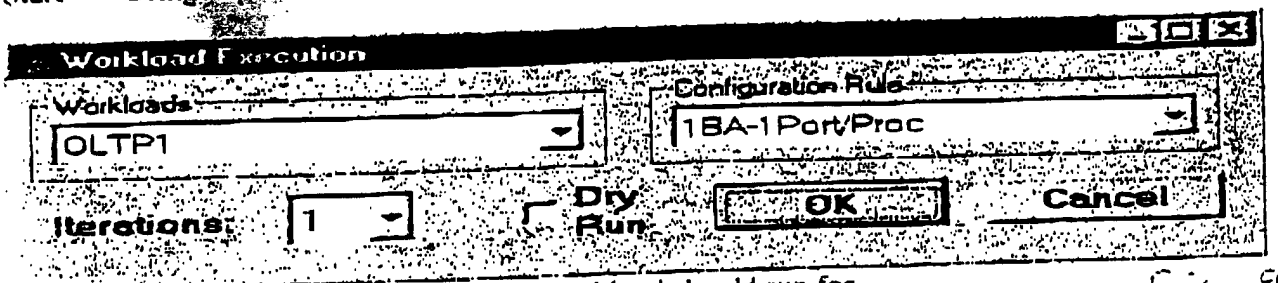


Fig 9G

Iterations- The number of iterations the Workload should run for
Dry Run - Dry run will run through the scripts but not execute the Workload
OK - Will execute the Workload. bringing up the EmcMark Workload monitor window
Cancel - Will cancel the Workload execution

Response Time Workload

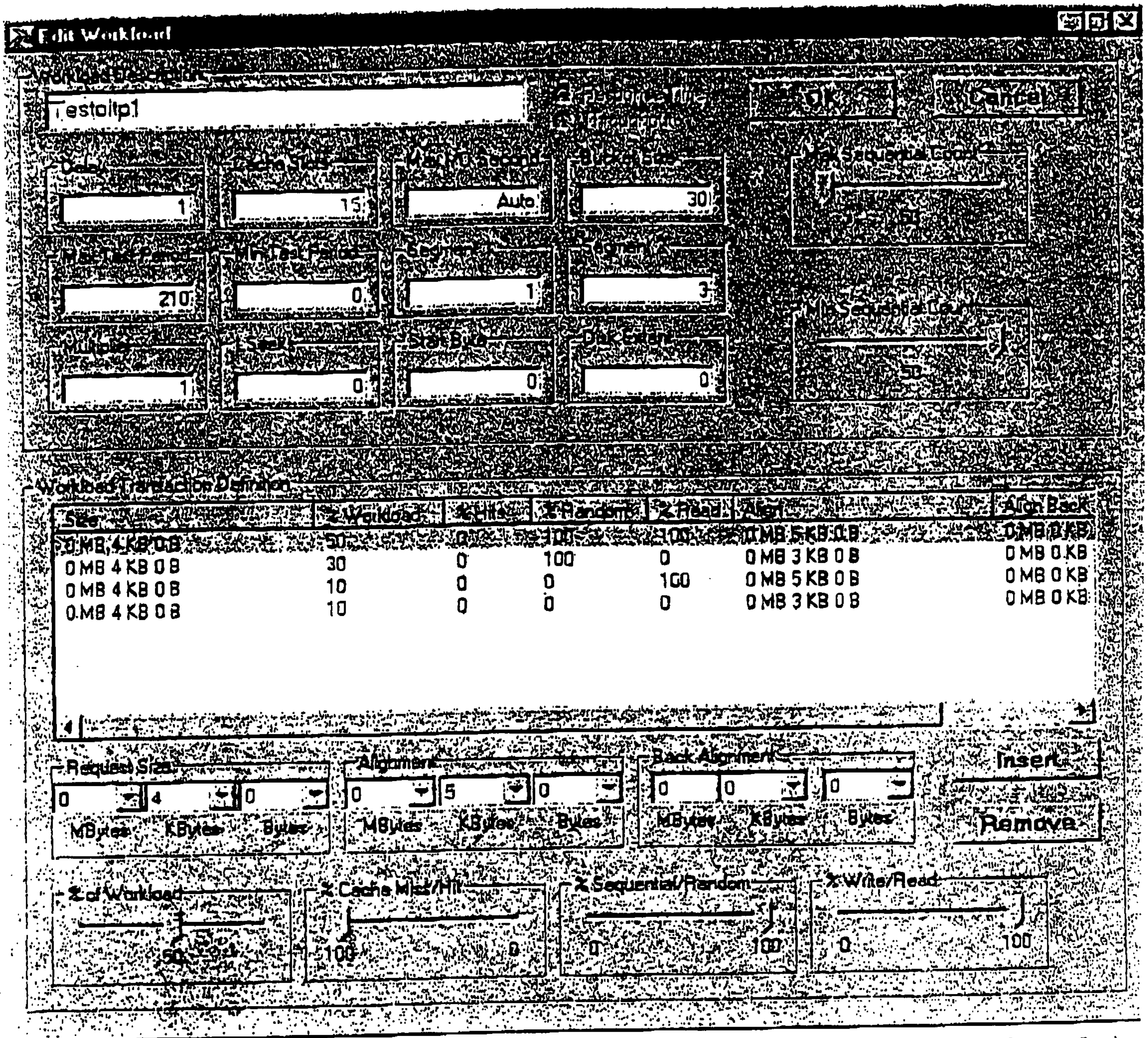


Fig 9H

- Max Seq cannot be ∅
- Min Seq - max is Max Seq selection

arrow Key - move by 10
- mouse - move by 100

09642568.081800

Throughput Workload

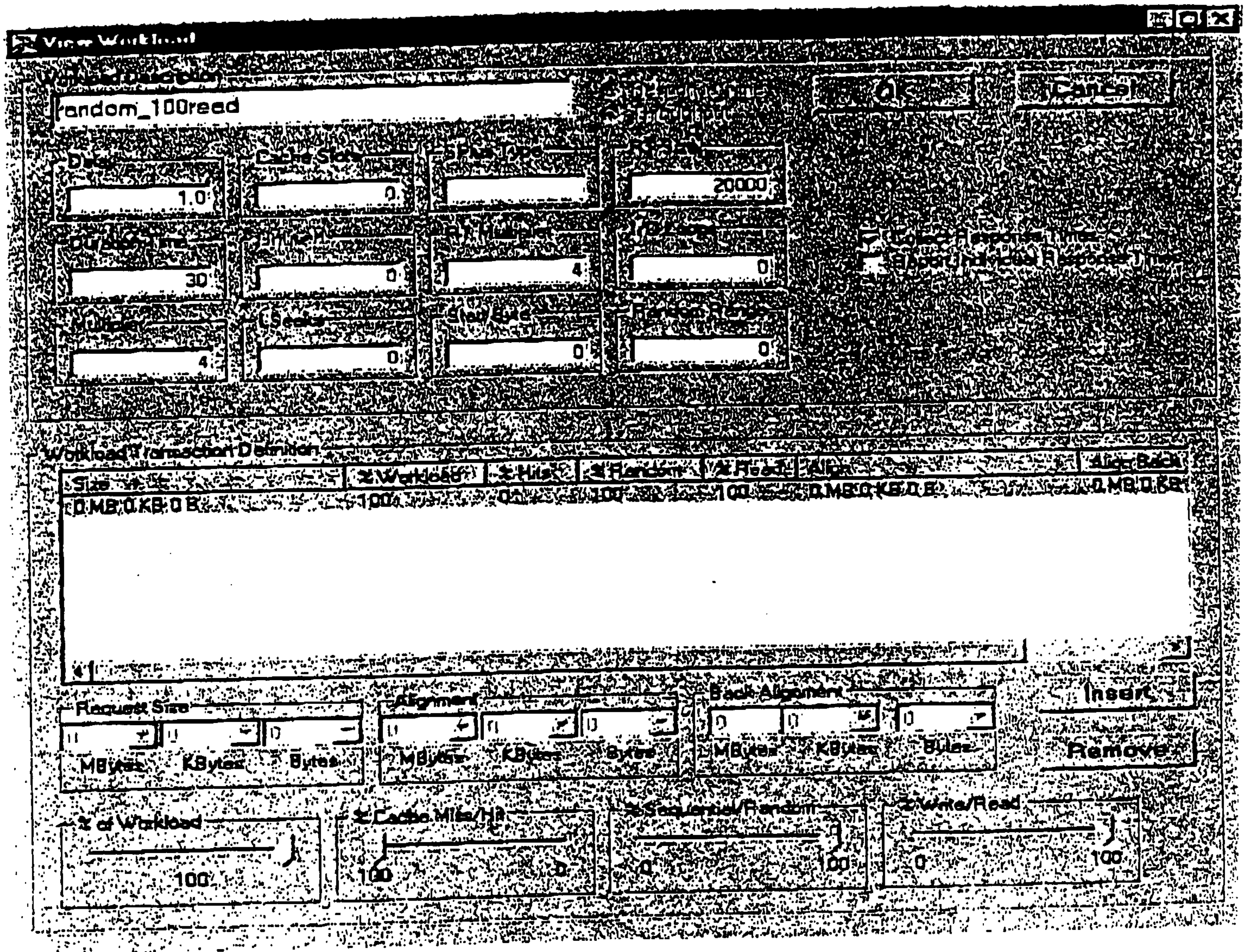


FIG 9I

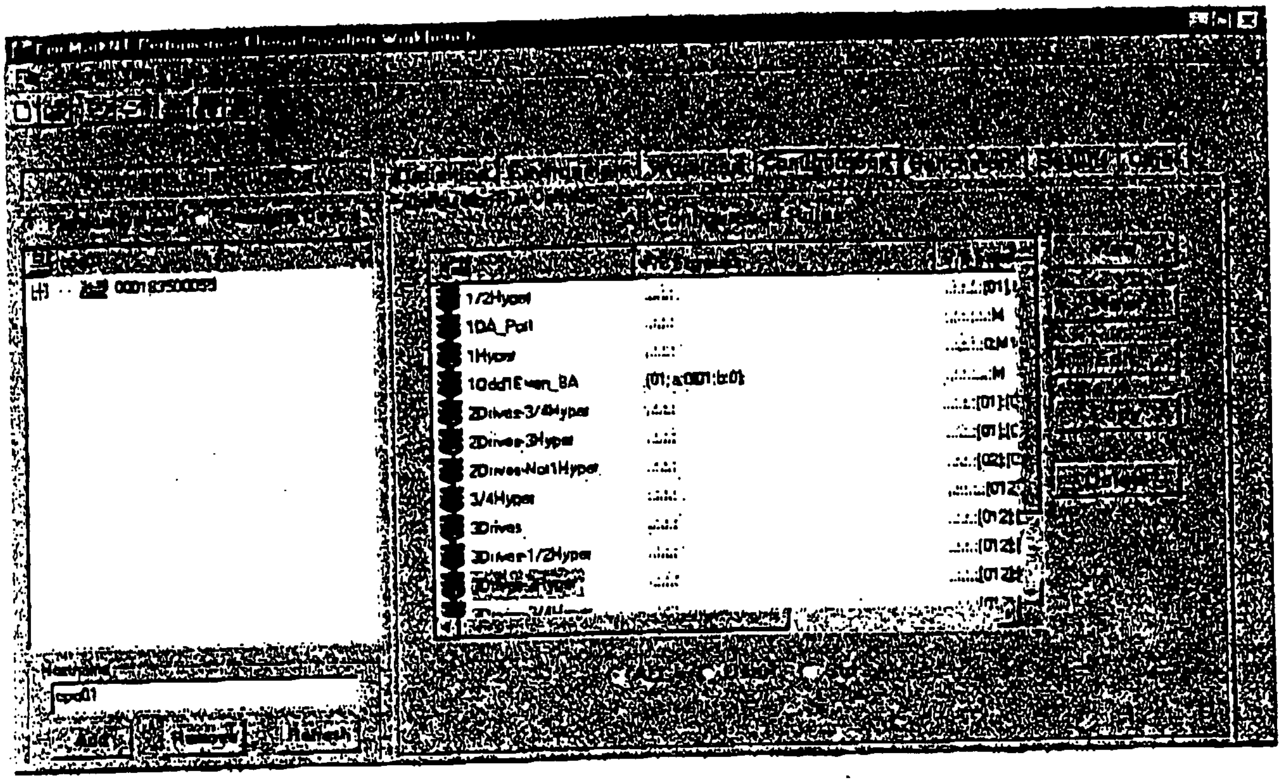


FIG. 9J

All - All available Rules **User** – User Defined Rules **Std** – Standard Rules

View - Allows viewing of the detailed definition of Rule
New - Brings up the Define Workloads form to define a new Rule
Edit - Allows editing of User Defined Rules
Copy - Copies the selected Rule into a new name, then brings up the Edit screen allowing edits to the new Rule.
Delete - Only for User Defined Rules. Allows the deletion of a Rule.

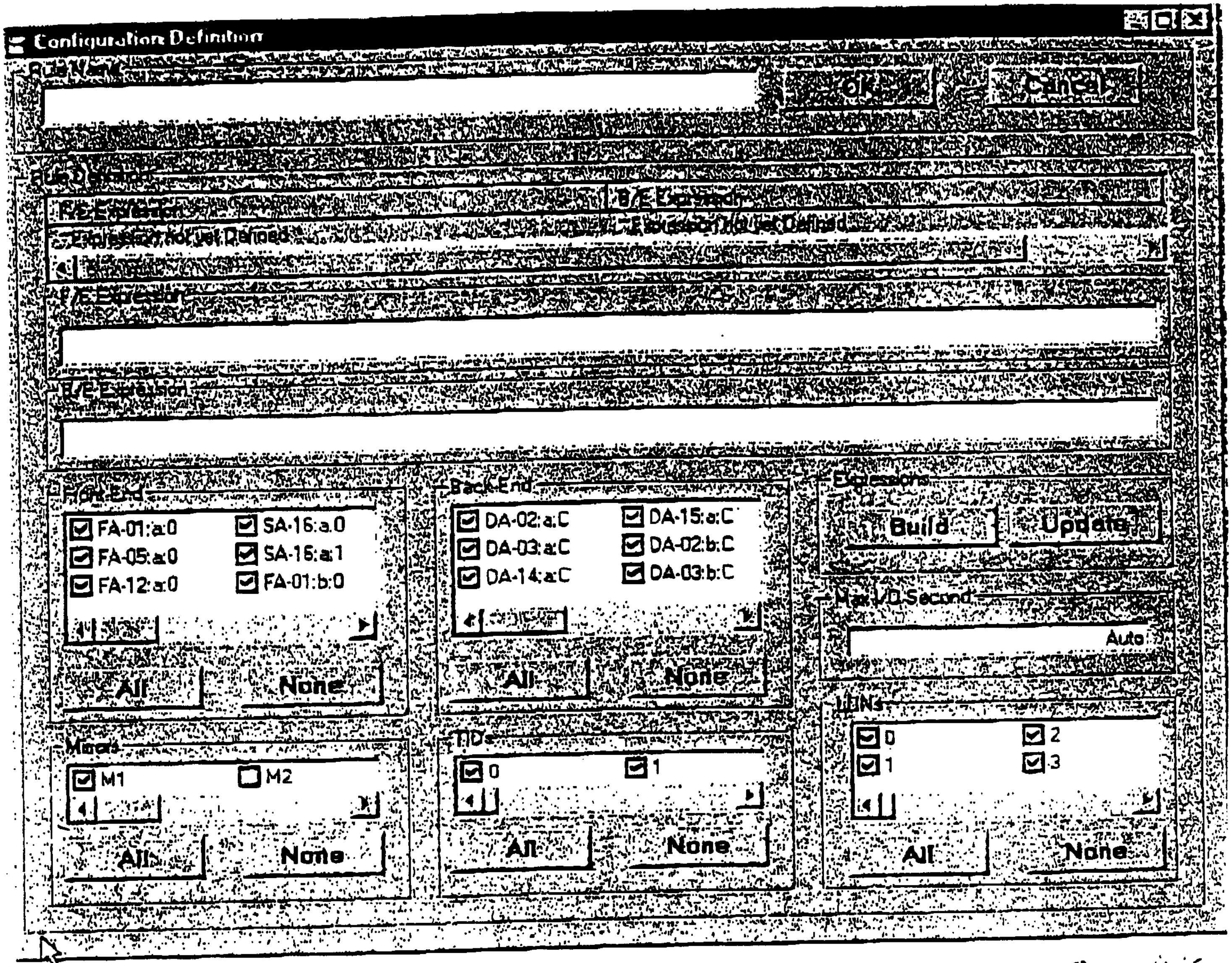


Fig. 4K

Front End - BA/Processor/Port information pulled from SymAPI if Symmetrix connected
Back End - DA/Processor/Port information pulled from SymAPI if Symmetrix connected

Mirros. TIDs and Luns information pulled from SymAPI if Symmetrix connected

All/None buttons toggle checked boxes on or off.

Build Button – will built the expressions if the information has been downloaded from the Symmetrix. If no information is available then the expressions can be manually added to the F/E Expression and B/E Expression boxes.

Update Button – will update the F/E Expression and B/E Expression into the database.

OK will save the rule into the database
Cancel will terminate the definition

Benchmark Tab

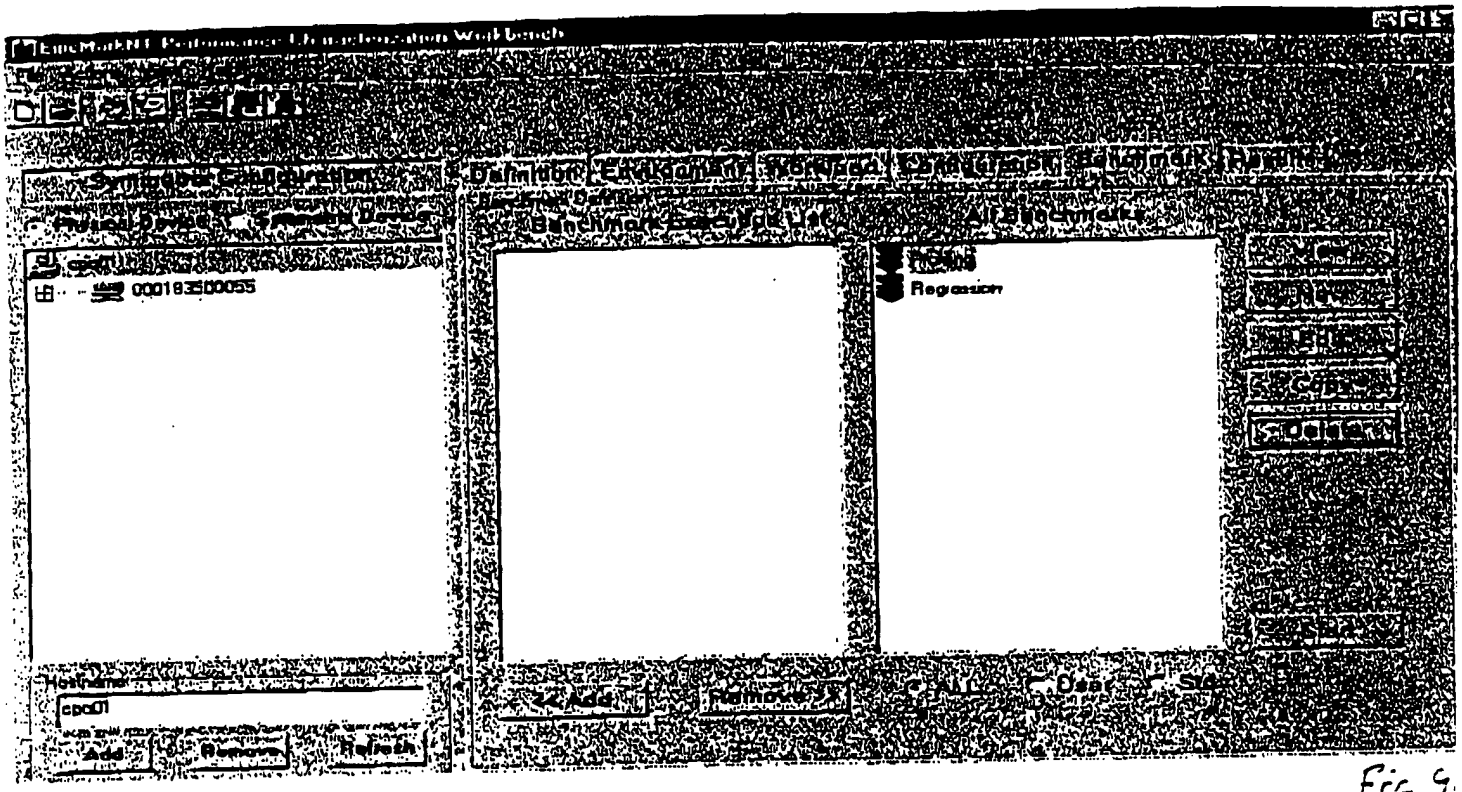


Fig 9

All - All available Benchmarks **User** – User Defined Benchmarks **Std** – Standard Benchmarks

View - Allows viewing of the detailed definition of a benchmark
New - Brings up the Define Benchmark form to define a new benchmark
Edit - Allows editing of User Defined Benchmarks
Copy - Copies the selected benchmark into a new name, then brings up the Edit screen allowing edits to the new benchmark.
Delete - Only for User Defined Benchmarks. Allows the deletion of a benchmark.
Add - Moved the selected benchmark over to the Benchmark Execution List. Only one Benchmark can be in the Execution list at a time
Remove- Removes item from the Benchmark Execution List to the All Benchmarks List
Start - Brings up the Benchmark Execution form to define and start the benchmark

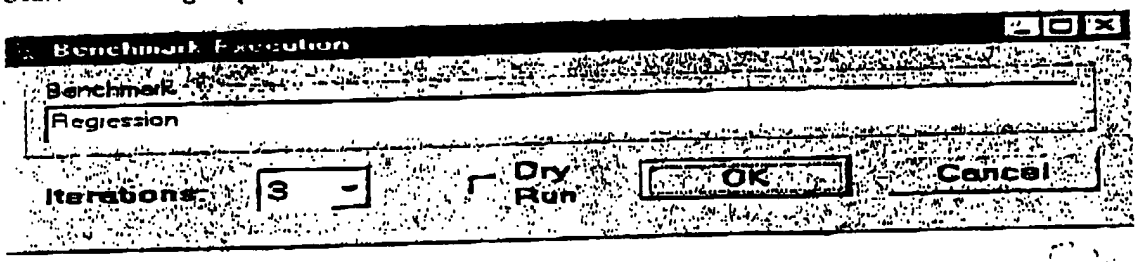


Fig 9.1

Iterations- The number of iterations the benchmark should run for
Dry Run - Dry run will run through the scripts but not execute the benchmark
OK - Will execute the benchmark, bringing up the EmcMark Benchmark monitor window
Cancel - Will cancel the benchmark execution

Define Benchmark

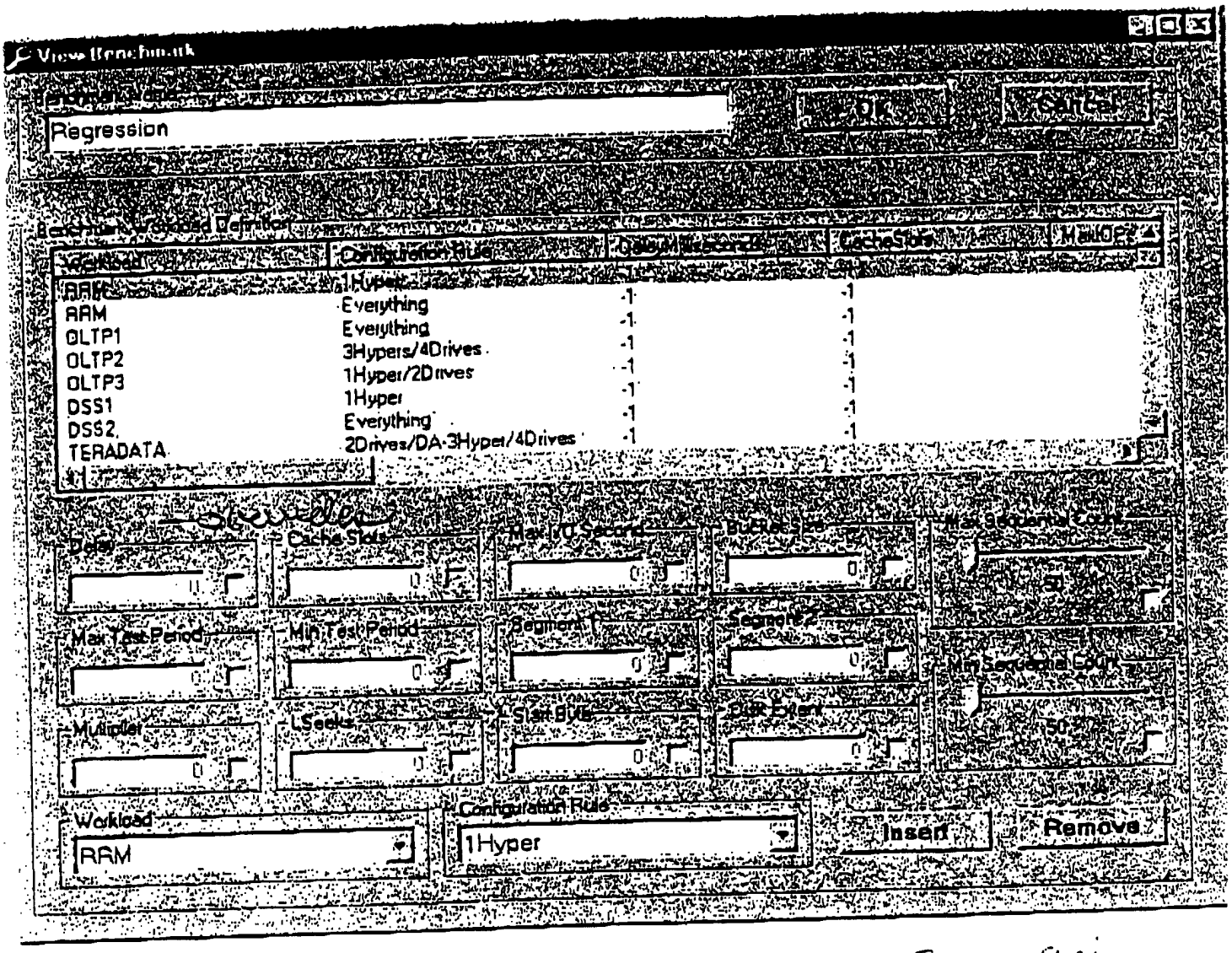


Fig. 9A

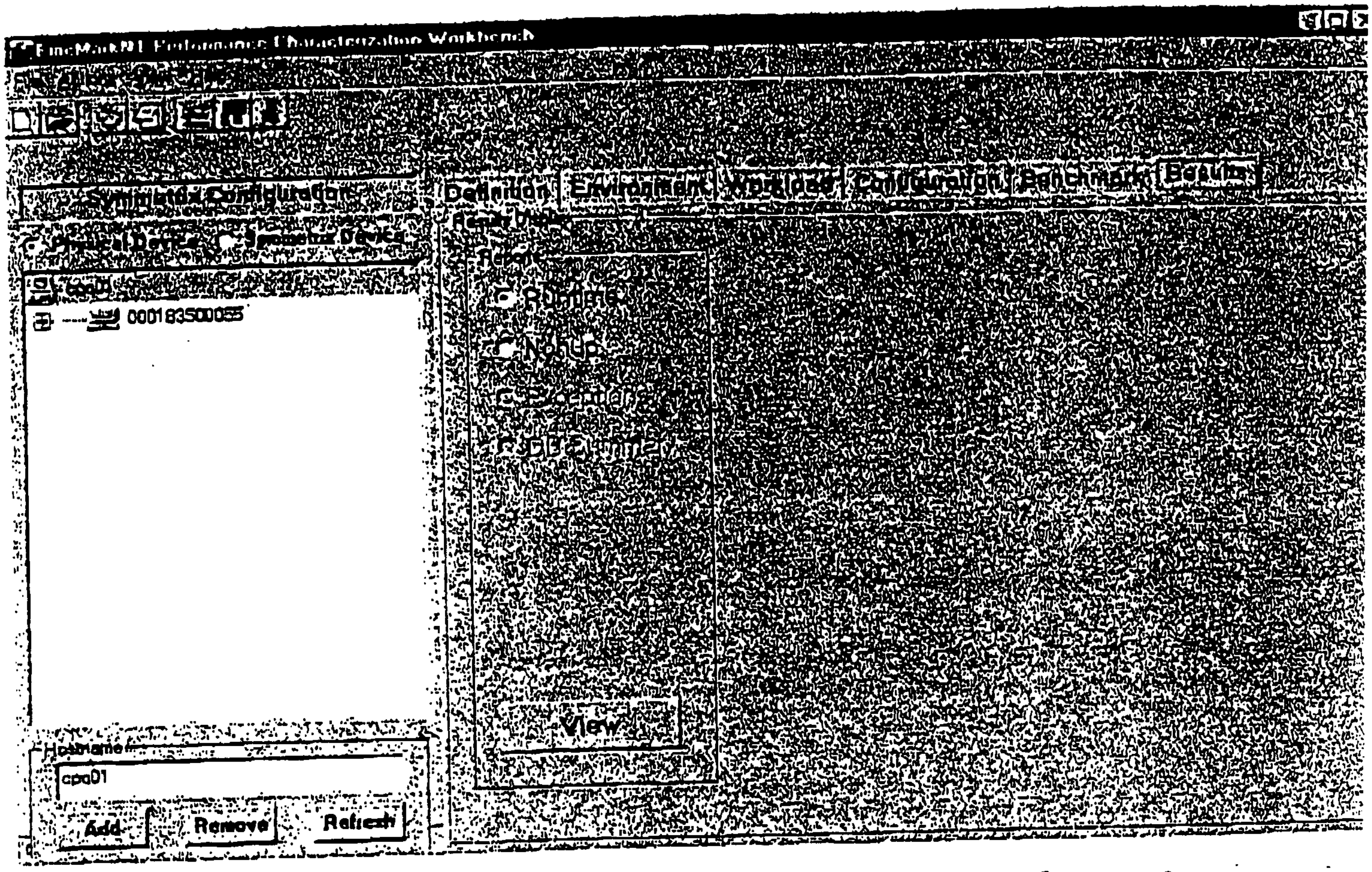


Fig 9C

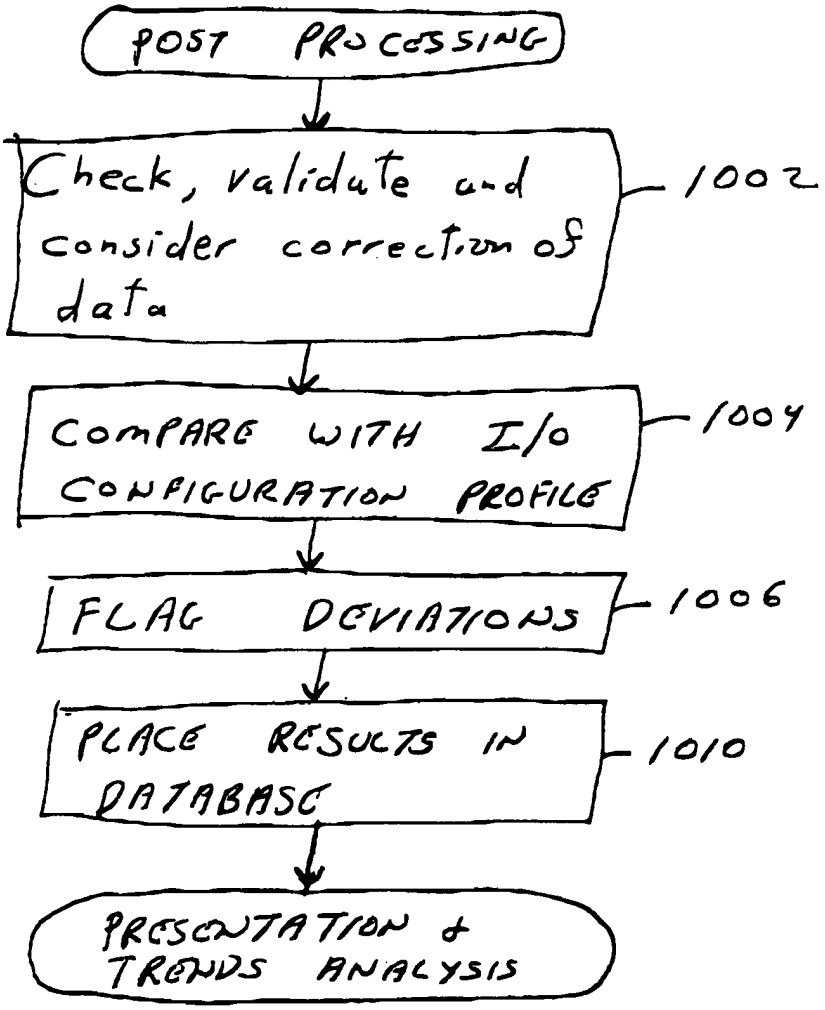


FIG. 10

Proc ss Advanc d Characterization Raw Data File

This function is used when your data format is not standard and you need to sort your data in the correct format for Splus to read the file.

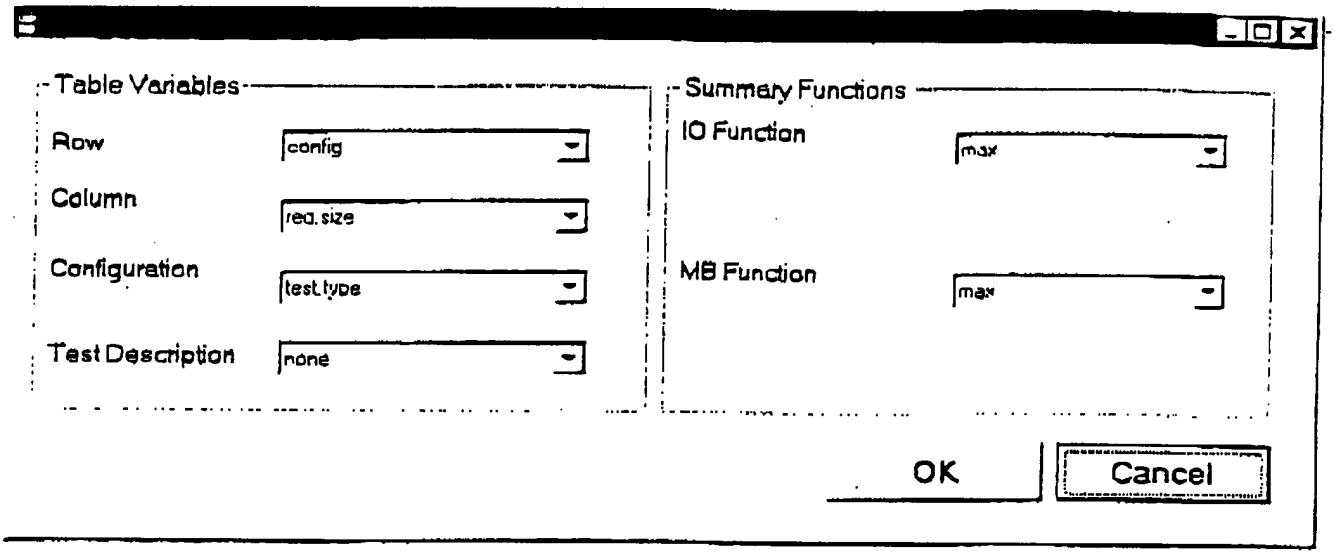


Fig. 10A

1. Select CTRL A
2. The Advanced Characterization Window will appear
3. Select the correct row/column/configuration/test description options for your data
4. Select the summary functions for your data
5. Select OK
6. A Characterization file will be generated in the Post Processing Folder with the extension _adv.txt

Process Advanced DB Simulator Raw Data File

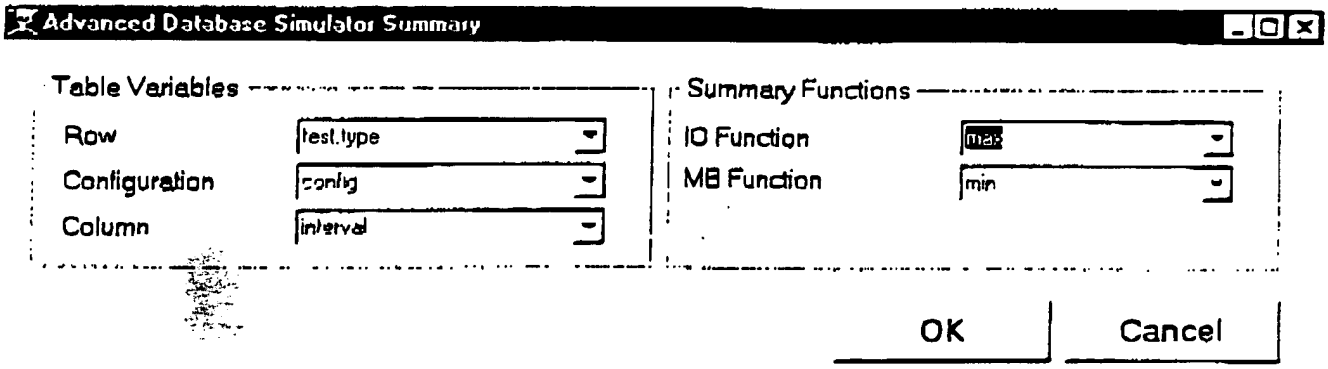


Fig. 10B

1. Select CTRL B
2. The Advanced DB Simulator Window will appear
3. Select the correct row/column/configuration/test description options for your data
4. Select the summary functions for your data
5. Select OK
6. A DB Simulator file will be generated in the Post Processing Folder with the extension _adv.txt

File Descriptions

File Name	Description	HighLights
Char.Summary	Summary file of each Characterization test broken down by iteration, test type, and configuration	
Char.Splus	Data file feed to Splus to create Characterization Objects	
Char.Errors	Characterization errors produced from processing the raw data files.	Message appears if error file exists.
SX.Summary	SX summary data broken down by iteration, test type and configruation.	
SX.Splus	Data file feed to Splus. Used with Char.Summary file to create Characterization Objects	
SX.Errors	SX errors from processing the raw data files	Message appears if error file exists.
DB.Table	Summary file of each DB Simulator test broken down by iteration, test type and configuration	
DB.Splus	Data file feed to Splus to create DBSimulator Objects	
DB.Errors	DB Simulator errors produced from processing the raw data files	Message appears if error file exists.
SX_DB.Summary	SX DB summary data broken down by iteration, test type and configuration.	
SX_DB.Splus	Data file feed to Splus. Used with DB.Splus file to create DBSimulator Objects	
SX_DB.Errors	SX_DB errors produced from processing the raw data files	Message appears if error file exists.
Cache Ratio Report	Report tracking the Cache ratio from the Sym and the processed data	Rep rt name: "CacheRatioReport.txt" Located in the Raw Data folder Message appears if a report

Fig. 11

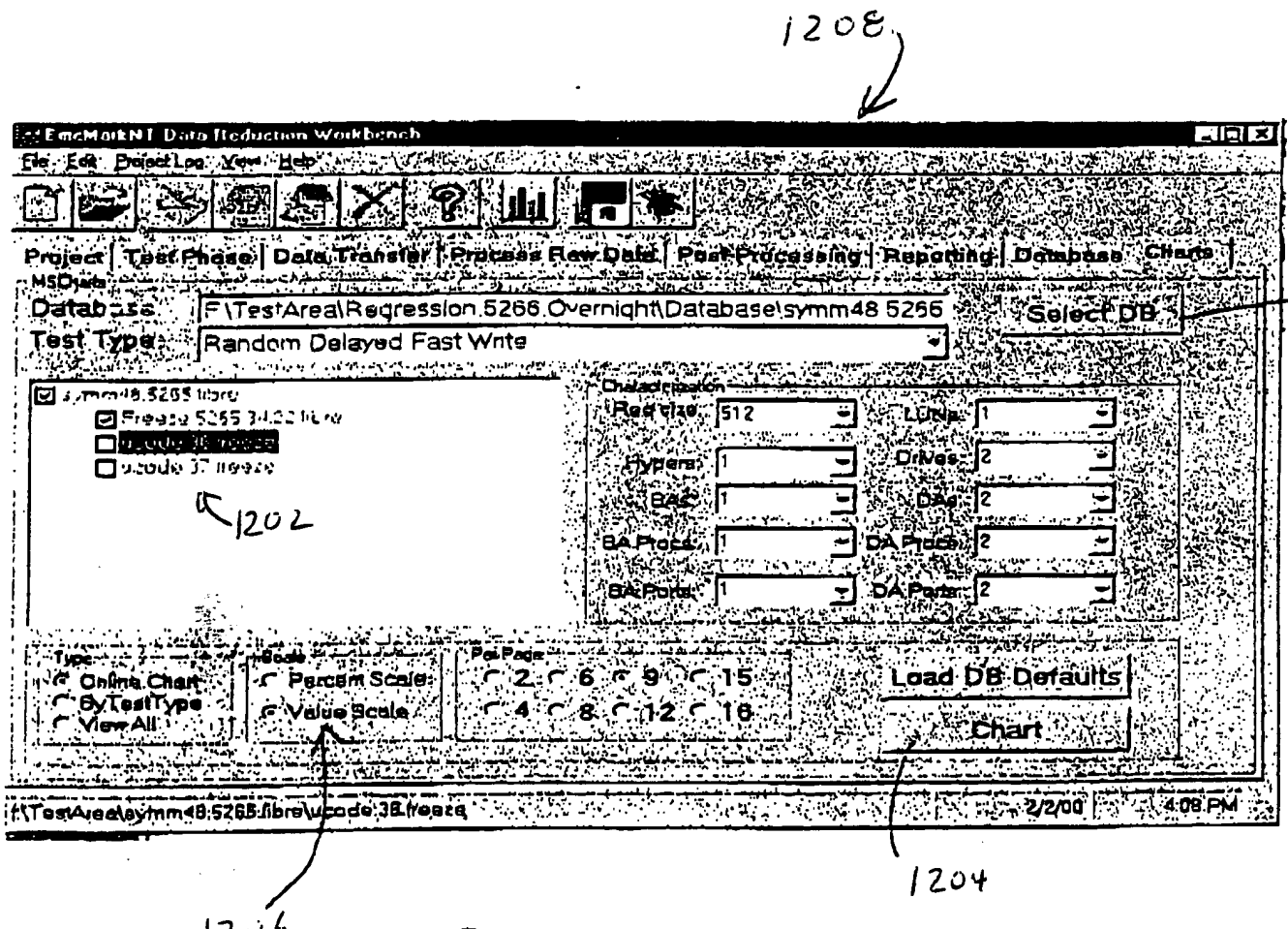


Fig. 12